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ABSTRACT

The proliferation of the mastery learning literature over the past decade has acutely intensified the need for the formation of a specific Clearinghouse on Mastery Learning (CML). An attempt at establishing such a clearinghouse has been under way for the past year through the Loyola Center for Educational Improvement, based at Loyola University in New Orleans. Of particular importance regarding the nature, current status, and projected activities of the CML is the provision of (1) an organizational basis for establishing a national/international information management system on mastery learning; (2) a central repository for mastery learning documents; (3) an analysis procedure for delineating the past, current, and future nature and direction of mastery learning efforts; (4) a source of information analysis products such as a comprehensive bibliography and highly specific bibliographies on mastery learning; and (5) an informational network system for individuals and professional organizations involved with mastery learning which would coordinate current efforts in the field with past accomplishments and needed future directions. This paper provides a detailed progress report on the CML since its inception. (Author)

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Managing the Proliferation of the Mastery Learning Literature: A Progress Report on the Loyola Clearinghouse on Mastery Learning

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Paper presented at the annual meeting of the American Educational Research Association, New York City, March 1982.

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Abstract

The proliferation of the mastery learning literature over the past decade has acutely intensified the need for the formation of a specific Clearinghouse on Mastery Learning (CML). An attempt at establishing such a clearinghouse has been under way for the past year through the Loyola Center for Educational Improvement which is based at Loyola University in New Orleans. Of particular importance regarding the nature, current status, and projected activities of the CML is the provision of (a) an organizational basis for establishing a national/international information management system on mastery learning, (b) a central repository for mastery learning documents, (c) an analysis procedure for delineating the past, current, and future nature and direction of mastery learning efforts, (d) a source of information analysis products such as a comprehensive bibliography and highly specific bibliographies on mastery learning, and (e) an informational network system for individuals and professional organizations involved with mastery learning which would coordinate current efforts in the field with past accomplishments and needed future directions. This paper provides a detailed progress report on the CML since its inception.

Managing the Proliferation of the Mastery Learning Literature:
A Progress Report on the Loyola Clearinghouse on Mastery Learning

The generation of the conceptual, measurement, and research literature on mastery learning has proliferated at an ever-increasing rate since the seminal publications of Carroll (1963) and Bloom (1968) during the 1960's which ushered in the most recent resurgence of interest in the topic. This trend--and, I might add, the information management challenges implied therein--are perhaps most noticeable when one considers the steady increase in the scope of issues addressed in such benchmark works as Block's (1971) Mastery Learning: Theory and Practice, Bloom's (1976) Human Characteristics and School Learning, Block and Burns' (1976) chapter on "Mastery Learning" in the Review of Research in Education, and, most recently, Bloom's (1980) All Our Children Learning.

Active mastery learning researchers, practitioners, and policy makers are undoubtedly aware of (a) the various preliminary literature sources and (b) the national networks/organizations which make possible the identification of completed and ongoing work in this rapidly expanding field. With respect to the former, for example, the extensive appeal to computer and/or manual searches of such sources as the ERIC system (namely, Resources in Education and Current Index to Journals in Education), Education Index, Psychological Abstracts, and Comprehensive Dissertation Abstracts enables one to remain current regarding the identification of the conceptual, measurement, and research literature on mastery learning. With respect to the latter, such

such groups as the Network for Outcome-Based Schools and AERA's Special Interest Group on Mastery-Based Instruction provide another source of information regarding not only personnel involved in the mastery learning movement but also documents, programs, workshops, conferences, agencies, and institutions which address this same topic.

Even with the above-cited literature and organizational sources of information on mastery learning, one can occasionally encounter literature review and/or program development tasks which would be facilitated considerably if there existed a better mechanism for managing the informational needs of those interested in mastery learning. Or, stated another way, there has been a dire need for the establishment of a specific Clearinghouse on Mastery Learning (CML) which would serve, among other purposes, as a national/international repository for mastery learning documents.

An attempt at establishing such a clearinghouse has been under way for the past year through the Loyola Center for Educational Improvement (LCEI) which is based at Loyola University in New Orleans. This paper provides a detailed progress report on the nature and current status of the CML as well as its projected activities.

Nature of the Loyola Clearinghouse on Mastery Learning

Consistent with the general theme of serving as a repository for conceptual, measurement, and research documents on mastery learning, the CML represents an organizational basis for studying and utilizing completed and ongoing works pertaining not only to the specific topic of mastery learning but also to such closely-related topics as

competency- or outcome-based education, instructional design, the time factor in school learning, diagnostic-prescriptive teaching, and criterion-referenced instruction. More specifically, the intent of the CML is fivefold in nature: (a) to serve as a catalyst and organizational basis for establishing a national/international information management system on mastery learning; (b) to identify, collect, and catalog in one central location all conceptual, measurement, and research literature documents directly or tangentially related to mastery learning; (c) to analyze such documents using multiple dimensions (to be discussed later in this paper) so as to make possible a selective computerized search and retrieval system; (d) to generate information analysis products such as comprehensive, as well as highly specific, bibliographies and literature reviews; and (e) to accommodate more extensively than is presently the case those informational needs of mastery learning researchers, practitioners, and policy makers.

Current Status of the Loyola Clearinghouse on Mastery Learning

Since the inception of the CML in January of 1981, manual and/or computer searches have been conducted of the following preliminary sources: (a) ERIC (i.e., Resources in Education and Current Index to Journals in Education), (b) Education Index, (c) Psychological Abstracts, (d) Comprehensive Dissertation Abstracts, and (e) Conference Papers Index. These searches have used descriptive terms directly and tangentially related to mastery learning. Additionally, comprehensive searches have been made for monographs, technical reports, and books which are primarily oriented in a global fashion to the broad field of instructional psychology but which contain chapters and/or edited

entries focusing on mastery learning. For example, sources such as Anderson and Block (1977), Arlin (1974), Benjamin (1981), Block (1980), Block and Burns (1976), Bloom (1971, 1975), Borg (1980), Buss and Poley (1976), Carroll (1962, 1965), Carroll and Spearitt (1967), Cross (1976), Davis (1975), Denham and Lieberman (1980), Horton (1981), Okey (1975), and Spencer and Semb (1977) fall into this category and perhaps could go undetected if one were relying exclusively on a computer and/or manual search of the standard preliminary sources.

Subsequent to the searches, the relevant documents have been collected in microfiche, microfilm, reprint, or xerox form and cataloged in accordance with the American Psychological Association's (APA) format for bibliographic citations. These bibliographic citations currently number approximately 1,000 and comprise a comprehensive computer-based data file. The computer hardware being employed is a Hewlett-Packard 3000; the computer software governing the format for (a) the bibliographic citation entries at an interactive terminal and (b) the standard line printer output following APA specifications includes QEDIT and PROSE (Robelle Consulting Ltd.; Aldergrove, British Columbia). These two commercially-available software packages are augmented by a "pre-processor" computer program written by Mr. Daniel Bontempo of Loyola University's Academic Systems Center.

The computer-based data file on mastery learning, along with the computer hardware and software just cited, makes possible the generation of a state-of-the-art bibliography on mastery learning which is more comprehensive in nature than would be possible if one were relying exclusively on computer and/or manual searches of the standard

preliminary sources. Accordingly, an updated edition of the comprehensive mastery learning bibliography will be made available on a quarterly basis; namely, spring (March 1), summer (June 1), fall (September 1), and winter (December 1).[1]

Projected Activities for the Loyola Clearinghouse on Mastery Learning

So as to accommodate all five of the previously-mentioned objectives of the CML, the following activities are projected and represent the most immediate concerns of the project:

1. Update the Mastery Learning Data File Via a Continuation and Expansion of the Data Base Searches. On a monthly basis, manual and computer searches will be conducted of the previously-cited data bases--ERIC, Education Index, Psychological Abstracts, Comprehensive Dissertation Abstracts, and Conference Papers Index--so as to update the CML's computer-based data file already in existence. Concurrently, the searches will be expanded to include other data bases such as the Smithsonian Science Information Exchange, Science Citation Index, Social Science Citation Index, and Bibliographic Index. It is of utmost importance that individuals and professional organizations involved with mastery learning apprise the CML of completed, ongoing, and projected efforts in this area.

2. Acquire Relevant Documents As the Data File Is Updated. As an essential sequel to the monthly updating of the CML's computer-based data file, the acquisition of relevant mastery learning documents must be an ongoing activity. In this matter, also, individuals and organizations are encouraged to forward pertinent materials to the CML or, at the very least, to apprise the CML as to how such materials

might be obtained. Quite obviously, this activity of acquiring relevant mastery learning documents is imperative if the content analyses mentioned earlier are to be conducted.

3. Conduct Content Analyses of Relevant Documents Using Multiple Dimensions for Coding and Computer Search/Retrieval Purposes. As alluded to earlier in this paper, the current status of the CML's computer-based data file is such that editions of a comprehensive bibliography on mastery learning are available on a quarterly basis (with the first series having started with the spring 1982 issue).

In order to go beyond the dissemination of this comprehensive bibliography on mastery learning and to provide a basis for implementing a highly selective computerized search and retrieval system, each document must be analyzed with several dimensions in mind. For example, a journal article reporting the results of a mastery learning study done in mathematics at the high school level might be analyzed along several dimensions, some of which may be type of literature (i.e., conceptual, measurement, or research), subject area, level of education, research design, independent variable(s), dependent variable(s), and type of mastery learning research (Type I-IV a la Block & Burns, 1976). Such an analysis would provide a basis for including within the data file's bibliographic citation for this study an alphanumeric code which would make possible a selective computer search of the data file and the resulting retrieval of this citation along with others that have been similarly coded in whole or in part. Thus, one would have available the option of requesting from the CML not only a comprehensive bibliography on mastery learning but also a highly selective computer

search and printout of only those bibliographic citations which correspond to, let's say, specific independent and dependent variables that are the focus of the research effort.

This particular activity of conducting content analyses of mastery learning documents so as to make possible a highly selective search, retrieval, and dissemination effort is, admittedly, quite ambitious when one considers the vast range of relevant documents that are available and, perhaps, an even more extensive list of possible dimensions that could be used in analyzing and coding each citation. Consequently, an appeal is made here for reactions from interested individuals and organizations regarding dimensions that would be most appropriate and useful for the analysis and coding tasks.

For the time being, at least, preliminary work has begun on the content analyses and bibliographic coding tasks using the following dimensions for each of the three categories of professional literature--conceptual, measurement, and research:

Those mastery learning documents considered to be part of the conceptual literature are being analyzed from the perspective of 14 dimensions which represent 14 fields spanning a total of 41 characters. Hence, the 41-character alphanumeric code assigned to each conceptual literature bibliographic citation represents a succinct characterization of the document and, when considered collectively, provides the basis for a selective search and retrieval from this sub-population of the total data file. Table 1 surveys the range of dimensions, fields, and characters used for the alphanumeric coding of the conceptual literature documents.

Insert Table 1 about here

In a similar fashion, the measurement literature documents are under analysis from the standpoint of 13 dimensions which represent 13 fields encompassing a total of 36 characters. The 36-character alphanumeric code appropriate to each measurement literature bibliographic citation likewise characterizes the essential features of the document and, when viewed collectively, represents the basis for a selective search and retrieval from this measurement sub-population of the complete data file. Table 2 identifies the range of dimensions, fields, and characters employed in the alphanumeric coding of the measurement literature documents.

Insert Table 2 about here

Finally, the same basic procedure and rationale apply to those mastery learning documents associated with the research literature. In this instance, the research documents are being analyzed from the perspective of 18 dimensions which represent 18 fields covering a total of 52 characters. Table 3 delineates the range of dimensions, fields, and characters that makes possible the alphanumeric coding of the research literature documents.

Insert Table 3 about here

4. Generate and Disseminate Information Analysis Products. The successful completion of the three previously-cited projected activities should make possible (a) the continued production and dissemination of the comprehensive bibliography on mastery learning and (b) the eventual generation and dissemination of highly specific bibliographies on mastery learning that are tailored to the unique needs of individual researches, practitioners, and policy makers. Furthermore, these two types of information analysis products should provide an impetus to the tasks of (a) synthesizing the available mastery learning research in one or more areas--perhaps by way of a meta-analysis process (see Glass, McGaw, & Smith, 1981)--and (b) conceptualizing a mastery learning taxonomy and research paradigm that would direct future reserach and development efforts (see Hymel, Note 1).

Concluding Remarks

Of particular importance regarding the nature, current status, and projected activities of the Loyola Clearinghouse on Mastery Learning is the provision of (a) an organizational basis for establishing a national/international information management system on mastery learning, (b) a central repository for mastery learning documents, (c) an analysis procedure for delineating the past, current, and future nature and direction of mastery learning efforts, (d) a source of information analysis products such as a comprehensive bibliography and highly specific bibliographies on mastery learning, and (e) an informational network system for individuals and professional organizations involved with mastery learning which would coordinate current efforts in the field with past accomplishments and needed future directions.

The continued success of this endeavor, however, will be contingent in large measure on the supportive reaction of interested parties that hopefully will take the form of (a) apprising the CML of relevant mastery learning documents via submissions, (b) suggesting bibliographic coding schemes that would most extensively make use of the selective computer search and retrieval capability, and (c) indicating any other types of services the CML might provide beyond those already mentioned in this paper. Such imput is essential if the potential represented by the CML is indeed to be actualized to the fullest in serving mastery learning researchers, practitioners, and policy makers.

Reference Note

1. Hymel, G. M. An instructional design model for guiding mastery learning research and development efforts. Paper presented at the annual meeting of the Mid-South Educational Research Association, Lexington, Kentucky, November 1981.

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Footnotes

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[1]Inquiries regarding the ordering procedures and cost of each edition of Mastery Learning: A Comprehensive Bibliography should be sent to: Dr. Glenn M. Hymel; Director, Loyola Center for Educational Improvement; Clearinghouse on Mastery Learning; Loyola University; New Orleans, LA 70118.

TABLE 1

Conceptual Literature Documents: The Range of Dimensions, Fields, and Characters for Alphanumeric Coding

Dimension 1:	Conceptual(C)--Field 1, Character 1
Dimension 2:	Theoretical(T), Practical(P)--Field 2, Characters 2-3
Dimension 3:	Psychological(P), Sociological(S), Historical(H), Philosophical(P)--Field 3, Characters 4-7
Dimension 4:	Supportive(S), Critical(C), Neutral(N)--Field 4, Characters 8-10
Dimension 5:	Learning for Mastery(L), Personalized System of Instruction(P)--Field 5, Characters 11-12
Dimension 6:	Elementary Education(E), Secondary Education(S), Higher Education(H), Professional Education(P)--Field 6, Characters 13-16
Dimension 7:	Administration(A), Guidance(G), Curriculum(C), Instruction(I), Supervision(S)--Field 7, Characters 17-21
Dimension 8:	Program Syllabus(P), Course Syllabus(C), Instructional Unit(U)--Field 8, Characters 22-24
Dimension 9:	Preparing Instruction(P), Delivering Instruction(D), Evaluating Instruction(E)--Field 9, Characters 25-27
Dimension 10:	Preconditions(P), Operating Procedures(O)--Field 10 Characters 28-29
Dimension 11:	Cognitive Consequences(C), Affective Consequences(A), Psychomotor Consequences(P), Time Consequences(T)--Field 11, Characters 30-33
Dimension 12:	Mathematics(MA), Language Arts(LA), Science(SC), Social Studies(SS), Foreign Languages(FL), Business Education(BE), Home Economics(HE), Health & Physical Education(PE), Performing Arts(PA), Vocational-Technical Education(VT), Health Sciences(HS), Business & Industry(BI), Military Science(MS), Law(LW), Philosophy & Theology(PT), Engineering Sciences(ES), Behavioral Sciences(BS), Computer Science(CS)--Field 12, Characters 34-35

Dimension 13: In-Service(I), Pre-Service(P)--Field 13, Characters 36-37

Dimension 14: Type I MLR(1), Type II MLR(2), Type III MLR(3), Type IV MLR(4)--Field 14, Characters 38-41

TABLE 2

Measurement Literature Documents: The Range of Dimensions, Fields, and Characters for Alphanumeric Coding

Dimension 1:	Measurement(M)--Field 1, Character 1
Dimension 2:	Norm-Referenced Measurement(N), Criterion-Referenced Measurement(C)--Field 2, Characters 2-3
Dimension 3:	Commercially-Available Instruments(C), Teacher-Constructed Instruments(T)--Field 3, Characters 4-5
Dimension 4:	Diagnostic Testing(D), Formative Testing(F), Summative Testing(S)--Field 4, Characters 6-8
Dimension 5:	Domain-Oriented Conceptualization of CRT(D), Mastery-Oriented Conceptualization of CRT(M)--Field 5, Characters 9-10
Dimension 6:	Cognitive Domain(C), Affective Domain(A), Psychomotor Domain(P), Other Domains(O)--Field 6, Characters 11-14
Dimension 7:	Competency Testing Pro(P), Competency Testing Con(C), Competency Testing Neutral(N)--Field 7, Characters 15-17
Dimension 8:	Content Domain Specification(D), Formulating Objectives (F), Selecting Objectives(S), Standard Setting(S)--Field 8, Characters 18-21
Dimension 9:	Item Construction(C), Item Selection(S), Item Revision (R)--Field 9, Characters 22-24
Dimension 10:	Validity(V), Reliability(R), Item Difficulty(F), Item Discrimination(D)--Field 10, Characters 25-28
Dimension 11:	Measures of Aptitude(A), Measures of Ability To Understand Instruction(U), Measures of Perseverance(P), Measures of Opportunity(O), Measures of Quality of Instruction(I)--Field 11, Characters 29-33
Dimension 12:	Criteria for Evaluating Instruments(C)--Field 12, Character 34
Dimension 13:	Grading Procedures(G), Score Interpretation(I)--Field 13, Characters 35-36

TABLE 3

Research Literature Documents: The Range of
Dimensions, Fields, and Characters for Alphanumeric Coding

Dimension 1:	Research(R)--Field 1, Character 1
Dimension 2:	Historical(H), Descriptive(D), Correlational(C), Causal-Comparative(U), Experimental(E)--Field 2 Character 2
Dimension 3:	Pre-Experimental(P), Quasi-Experimental(Q), True Experimental(T)--Field 3, Character 3
Dimension 4:	Elementary Education(E), Secondary Education(S), Higher Education(H), Professional Education(P)--Field 4, Character 4
Dimension 5:	Administration(A), Guidance(G), Curriculum(C), Instruction(I), Supervision(S)--Field 5, Character 5
Dimension 6:	Mathematics(MA), Language Arts(LA), Science(SC), Social Studies(SS), Foreign Languages(FL), Business Education(BE), Home Economics(HE), Health & Physical Education(PE), Performing Arts(PA), Vocational-Technical Education(VT), Health Sciences(HS), Business & Industry(BI), Military Science(MS), Law(LW), Philosophy & Theology(PT), Engineering Sciences(ES), Behavioral Sciences(BS), Computer Science(CS)--Field 6, Characters 6-7
Dimension 7:	Program Syllabus(P), Course Syllabus(C), Instructional Unit(U)--Field 7, Character 8
Dimension 8:	In-Service(I), Pre-Service(P)--Field 8, Character 9
Dimension 9:	Advantaged Participants(A), Disadvantaged Participants (D)--Field 9, Character 10
Dimension 10:	Learning for Mastery(L); Personalized System of Instruction(P)--Field 10, Character 11
Dimension 11:	Independent Variables: Performance Objectives(PO), Prerequisite Competencies(PC), Sequencing of Content (SC), Unit Size(US), Unit Pacing(UP), Social Organization(SO), Models of Teaching(MT), Learning Activities (LA), Formative Tests(FT), Feedback Mechanism(FM), Learning Correctives(LC), Learning Enrichment(LE), Mastery Requirement(MR), Grading Policy(GP)--Field 11 Characters 12-21

Dimension 12: Cognitive Dependent Variables: Acquisition(A), Retention(R), Transfer(T), Autonomy of Learning(A), Other(O)--Field 12, Characters 22-26

Dimension 13: Affective Dependent Variables: Attitude toward Subject/Schooling(AS), Self-Concept(SC), Anxiety(AX), Locus of Control(LC) Frustration Tolerance(FT), Perseverance(PR), Achievement Motivation(AM), Level of Aspiration(LA), Cooperation(CO)--Field 13, Characters 27-36

Dimension 14: Psychomotor and Other Dependent Variables: Psychomotor (P), Time(T), Other(O)--Field 14, Characters 37-39

Dimension 15: Level of Learning(L), Variability of Learning(V), Correlation(C)--Field 15, Characters 40-42

Dimension 16: Intellectual Skills(I), Cognitive Strategies(C), Factual Information(F), Attitudes(A), Motor Skills(M)--Field 16, Characters 43-47

Dimension 17: Statistically Supportive of Mastery Learning(SS), Numerically Supportive of Mastery Learning(NS), Numerically Nonsupportive of Mastery Learning(NN), Statistically Nonsupportive of Mastery Learning(SN)--Field 17, Characters 48-51

Dimension 18: Type I Mastery Learning Research(1), Type II Mastery Learning Research(2), Type III Mastery Learning Research (3), Type IV Mastery Learning Research(4)--Field 18, Character 52